

A LIST OF DRAGONFLIES FROM MAHABLESHWAR.

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I believe that I am correct in saying that the Mahableshwar Hills have not yet been worked for Dragonflies, so profiting by an enforced stay in India owing to having been granted Home leave, but no passage wherewith to avail myself of it, I decided that it would help to pass away the weary period of waiting if I made a short odonatological survey of the above mentioned Hills.

The period embraced was from the 20th April to the 1st May which being the ultra dry season, it must be confessed, was not the best possible time of the year for such a survey. However the amateur collector in this country can never be more than an opportunist as he is transferred far too often ever to be able to make a complete pro-annual survey of any district.

Mahableshwar, in spite of its high annual rainfall, is singularly dry and the only water I found was a small, rather dirty, artificial lake used exclusively as a dhobikhanah and a stream which resulted from the water percolating through the band which encloses the lake to the west.

This stream meanders for but a short distance in the dry season and may be said to terminate at Lingmala, two miles from Mahableshwar, where the water, if the stream has not run dry (The bed of the stream was dry this year at the foot of the Falls) topples over into the ravine at the head of the Yenna Valley.

Only one species appears to breed in the lake, but most of the other dragonflies breed in the stream whilst a few ascend from the plains below.

A break in the river at Lingmala, a height of about 4,000 feet, creates a gap between the fauna of the hills and that of the plains and also apparently isolates a number of plain species which have followed up the retreating line of water as the stream fails from below upwards. This following up of the retreating line of water probably accounts for so many of the plain species enumerated below, attaining to such great altitudes, which in many cases is more than double that of any previously recorded.

Their isolation is important as it should eventually lead to some differentiation and specialisation, but except for a local race of *Aciagrion hisopa* and a brilliantly coloured form of *Orthetrum chrysostigma*, I failed to find any sign of this taking place at present. It is possible however that a new *Caconeura* which I found to be moderately common along the aforementioned stream, is an offshoot of a form common to the Southern Hills and Ceylon. This new species I have named after Dr. Annandale, the present Director of the Zoological Survey of India.

SYSTEMATIC.

Aeshninae.

1. *Anax guttatus*, Burm. Only 3 males seen, 2 of which were hawking over the stream and the third was settled on a tree bordering the road above the lake.
2. *Anax immaculifrons*, Ramb. Very plentiful, indeed more so than I have ever seen it elsewhere, a circumstance which is probably due to the confined limits of its breeding places.

Many males were seen at any one time and females which are usually rare, could quite occasionally be seen in the act of ovipositing. They were so shy and wary that it was only by taking an unfair advantage of them as they were partially

submerged in the act of ovipositing, that I managed to take three specimens. In every case the male attended the female, hovering in the air about a foot above it and driving off other covetous males. The capture of the females quite failed to scare away the protecting males, which with fine courage returned again and again to the spot until their very persistence invited capture.

The dimensions of this fine insect are as follows :—

Male: length 77 mm., expanse 110 mm., hindwing 52 mm., abdomen 52 mm., antenodal nervures to forewing 17/18, hindwing 11/14. Female: length 82 mm., expanse 128 mm., hindwing 60 mm., abdomen 57 mm., antenodal nervures forewing 21/23, hindwing 15/16.

Gomphinæ.

3. *Ictinus*, sp. One male seen along stream. It was probably *I. rapax*.

Libellulinæ.

4. *Potomarcha obscura*, Ramb. Only a few specimens seen which were perched on twigs in jungle below the lake band.
5. *Orthetrum sabina*, Drury. A few specimens in reeds and grass along the river banks.
6. *Orthetrum chryso stigma*, Brauer. Moderately common along river banks in the upper reaches of the stream and especially so in a swamp below the lake band. Adult males were a bright blue all over but younger specimens had the thorax pale olivaceous green marked with black. The species was frequently seen pairing and ovipositing in the stream.
7. *Orthetrum pruinatum neglectum*, Ramb. Several males seen along upper part of stream, all freshly emerged and not markedly pruinosed.
8. *Diplacodes trivialis*, Ramb. Very common everywhere about the hills, settled on the ground or hovering close over its surface on roadsides, in open waste places and more rarely in the jungle. Only a few were seen along the course of the stream but it was common on the shore of the lake. Old specimens were markedly pruinosed, the eyes were a deep ultramarine blue and the stigma was blue from pruinescence.
9. *Neurothemis intermedia intermedia*, Ramb. Common in the jungles, usually settled amongst grasses or reeds.
10. *Crocotthemis servilia*, var *erythræa*, Fabr. Only a few males seen of this yellow variety and these usually around the shores of the lake.
11. *Trithemis aurora aurora*, Burm. A few of either sex seen over a pool at Lingmala, 4,000 ft. This was the extreme limit of the water and that the insect was not seen further up the stream, seems to prove that it had followed up the retreating water and thus attained to an extraordinary altitude for such a typical plain species.
12. *Trithemis festiva*, Fabr. Common along the stream. Several adult males were seen strikingly marked with yellow on the abdomen and in only a few of the adults were these markings fully obsolete.
13. *Trithemis kirbyi kirbyi*, Selys. Four males only seen, one of which was on the road side immediately below the lake band and the others sporting themselves on the trap rock above the Lingmala Falls. They were very wary as usual and I failed

to catch any. The orange fascia on the wings was very extensive and combined with the brilliant red of the body, rendered the insect a most conspicuous object.

14. *Trithemis pallidinervis*, Kirby. Only a single female taken which was perched on a twig on the lower slopes of Connaught Peak 4,300 feet. No others were seen, the occurrence of this insect at such an extraordinary altitude must be very rare.
15. *Bradinopyga geminata*, Ramb. Only a single female seen which was occupying a typical situation for this insect, on trap rock. Its cryptic colouring harmonised so well with the grey granite that had it not shifted its position I should have failed to notice it.
16. *Pantala flavescens*, Fabr. Moderately common. Usually seen hovering over roads and open spaces throughout the hills. I saw one in the Gymkhana garden one evening, hawking mosquitoes until it was quite dark.
17. *Tramea limbata*, Ramb. Not common. A few specimens seen in company with *Pantala* in similar situations to that insect and a single specimen taken beside the stream. The ground colouring of the abdomen in this male was more nearly crimson than reddish-brown. The basal wing marking was simple.
18. *Tramea basilaris burmeisteri*, Burm. Common in company with *Pantala*. A very familiar insect along all the roads in Mahableshwar.

Corduliinæ.

19. *Epopthalmia*, sp. Several specimens seen, usually flying high or swiftly along the roads or in open spaces in the jungles. I failed to take any but they appeared to be *E. frontalis*.
20. *Macromia cingulata*, Ramb. Several seen but only one male captured. The dimensions and appearance of this specimen compare closely with my specimens taken in Poona and are as follows:—

Length 61 mm., hindwing 37 mm., abdomen 45 mm. antenodal nervures to forewing 12, hindwing 8. Stigma black. Costa black for its inner three quarters. In addition to the usual markings on the abdomen, there is a moderately large, basal, lateral bordering spot of yellow on the 9th segment.

Libellaginæ.

21. *Rhinocypha bisignata*, Selys. Only 3 specimens seen, 2 males and a female, taken over a pool at Lingmala. They do not differ more from type than can be explained by the usual slight variations inherent in members of this sub-family. This species is usually taken at an altitude of from 2,000 to 2,500 feet, whereas Lingmala is at an altitude of 4,000 feet.
22. *Ceriagrion coromandelianum*, Fabr. Only a single specimen seen, a male which was settled on grass beside the stream.
23. *Agriocnemis pygmaea*, Ramb. Uncommon. A few males and a female taken over a shallow pool beside the road, immediately below the lake band.
24. *Ischnura aurora*, Brauer. Not uncommon amongst low grass and herbage beside the upper part of the stream. In all the males, there is a triangular or oval, black spot at the apex of the 6th abdominal segment which may or may not be connected to the apical, black ring. At the base of the 8th segment, there is

a black, triangular marking and in some specimens the apex of the 7th segment bears a blue annule, incomplete in the middle of dorsum. This blue annule in one specimen, is indicated by two minute blue spots lying within the black, and there are two similar spots of blue lying within the black on the dorsal surface of the 10th segment.

25. *Pseudagrion decorum*, Ramb. Only a single female seen, no males seen or taken.
26. *Pseudagrion hypermelas*, Selys. Moderately common along the upper reaches of the stream.
27. *Aciagrion pallidum*, Selys. One female taken in dense jungle near the upper part of stream.
28. *Aciagrion hisopa*, race *krishna*, nov. The ground colouring of the prothorax, thorax and of the post-ocular spot is a deep lilac blue, which unfortunately fades after death or in alcohol. In the male the last 3 segments of the abdomen are of a royal, purplish blue, with, in a few specimens only, a small, elongated spot of black on the sides of the 8th segment. There is also quite occasionally a basal and mid-dorsal marking of black on the 10th segment. The ground colouring of the female is a pale greenish yellow, the 9th and 10th segments only being royal blue. Occasionally the apical border of the 8th segment is blue and frequently the basal third of the 9th is black, so that the blue on the 8th is enclosed and appears as a broad, blue annule.

Prior to a series of heavy thunderstorms, on the 23rd May, a large number of these insects emerged from the water. In their general condition they were useless as specimens, and so a few days later I went to collect the adult specimens, but found the insects quite scarce, especially the females which had apparently penetrated into the surrounding jungle.

Incidentally I may mention that I have often noticed that the simultaneous emergence of a large number of dragonflies infallibly portends heavy rain. This emergence was not a coincidence as two other species participated at the same time. What obscure instinct prompts this quickening, it is hard to say, but it is certain that insects, as a rule, can give a far better forecast of the monsoon than our most talented meteorologists.

29. *Copera marginipes*, Ramb. Common. Large numbers of white, teneral specimens appeared on the same date as the previous. They frequented the scrub lining the banks of the stream throughout the whole of its course.
30. *Caconeura annandalei*, sp. nov. Males moderately common, females very rare, especially after the 23rd May, on which date most of the species emerged. No adult forms were seen until the 26th.

Male: Length 35.5 mm., abdomen 29 mm., hindwing 20 mm., postnodal nervures, forewing variable 13, 16, hindwing constant 12. Head: labrum ochreous with a black spot at the base; sides of face pale, rest of head velvety black, except in not fully adult forms in which there is a more or less obscure reddish line traversing the vertex at the level of the anterior ocellus. Eyes olivaceous brown above, pale green below and with a broad, equatorial belt of brown separating the two colours abruptly.

Prothorax jet black in adults but with a spot of bright yellow in younger forms, in continuation of the humeral line.

Thorax black marked as follows:—bright red, narrow, humeral bands with a golden sheen which taper posteriorly, two broad,

yellow bands on the sides separated by a diffuse band of black. The upper band, especially in adults, is clouded with ochreous approximating to red in some specimens.

Legs black with a yellow annule at the base of the femora and a bright yellow stripe in the length of the extensor surface of the tibiæ.

Abdomen, ground colour white or creamy, marked broadly with black. The latter obscures most of the ground colouring on the dorsum and sides but small basal spots are left on the 2nd to 7th segments and the ventrum and middle portion of the sides are yellowish. There is a very fine, middorsal, ochreous line on the 2nd to 4th and sometimes 5th segments.

Wings hyaline; stigma pale-brown. The nervure *ab* is vestigial in all specimens and *Cu*² is only 3 cells in length.

Anal appendages robust black and not differing from the generic type.

The general male approximates to the colouring of the female. The humeral and lateral bands are creamy instead of red or ochreous. The white colouring on the abdomen is more in evidence and there is a broad, creamy white stripe on the vertex of the head replacing the obscure reddish one. The black on the thorax has not the deep velvety appearance of the adult. The superior anal appendages are white.

Female: Length 35.5 mm., abdomen 30 mm., hindwing 20 mm., post nodal nervures, forewing 13/15, hindwing constant 12.

Markings very similar to those of the male but no other colouring save ivory white and black. The labrum dirty white or brownish. The humeral line white and broader than in the male. The basal spots on the abdominal segments are larger and form almost complete, basal annules. The black encloses an obscure, white spot at the side of the apex of each segment and there is a creamy white, middorsal stripe on segments 8, 9 and 10. The apical borders of the 10th segment and the anal appendages are white. A fine, middorsal pale brown stripe on all segments from 2 to 7.

Hab. Settled on ferns, grasses or twigs along the whole length of the stream from its origin to Lingmala. Females keep to the jungle in the near neighbourhood.

Chloroneura quadrimaculata, Ramb. Common around lake; generally keeping to the shelter afforded by the stone walls. Found also in various sections of the river where it passes through ravines. A good number were seen at Lingmala. Mr. F. H. Gravely has found this insect in the Yenna Valley so that it apparently has a continuous distribution from Mahableshwar 4,500 ft. to Satara, ca 2,500 ft. I have traced its distribution from Satara to Khandala at the top of the ghat overlooking the Bombay plains from which latter however it is absent. 2,000 ft. I believe is about its lower limit.
